

Style, after all, is a matter of taste; many will disagree with the present reviewer in his strictures. But errors of grammar, punctuation, and syntax are in a different category; they are all too numerous in this work, and contribute not a little to the peculiarity of the style. One could wish that the editor of a University Press could find time to attend to such small matters.

THE NEW YORK BOTANICAL GARDEN

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Plant Breeding

Methods of Plant Breeding. By H. K. Hayes and F. R. Immer. McGraw-Hill. 1942. \$4.00.

At a time like the present when it behooves every person to examine his own endeavors and ask himself what he is contributing to the nation's war effort and to the cause of humanity this book seems particularly pertinent and useful. It clearly serves the double purpose of being a working guide for investigators in its own field and an excellent review of the accomplishments and possibilities of plant breeding for others.

Methods of Plant Breeding is a long book (well over four hundred pages), but the subject of plant breeding is one of tremendous consequence, and its accomplishments are already notable. The first chapter is a brief statement of the rôle of plant breeding. Chapters II and III cover respectively the genetic and cytogenetic basis of breeding methods and the mode of reproduction in relation to plant breeding. The latter chapter includes a good practical discussion of the heterosis question. In view of recent work of Dobzhansky and others indicating the close association between appearance and degree of hybrid vigor and the method of reproduction this arrangement seems particularly good. Chapter IV gives details of methods for selfing and crossing the principal economic crops. It is chapters like this one and later ones on the handling of data which gives the book its value as a working handbook. Chapters V, VI, and VII cover methods of breeding and Chapter VIII correlates them with practical problems of breeding for disease and insect resistance. Chapter XIII returns to this discussion of breeding for special characters. The intervening chapters are given over to summary discussions of the genetics of wheat, oats, barley, and flax. Chapters XIV and XV deal with breeding meth-

ods and the genetics of maize, which is genetically our best known plant and probably the one in which breeding has so far obtained the greatest improvements. Chapters XVI and XVII discuss controlled pollination and seed production methods. The former includes a good section on the part played by incompatibilities and sterilities in breeding problems. The last five chapters deal with the standard methods of treating and analyzing data. A bibliography, glossary of terms, and appendix of statistical tables complete the book.

Methods of Plant Breeding could hardly have appeared at a more opportune time. The plant breeder is to-day faced with what is at once a challenge and a golden opportunity. Regardless of how long or short the "duration" may be this country must for some years to come produce both foodstuffs and other plant materials to supply not only ourselves and our allies but later all those peoples of the world whose lands have been devastated by war. This program will necessitate further improvements in our main crop plants, and the cultivation of many crops new to our agriculture. The endeavor will be a tremendous one and this book should prove a valuable guide to those entrusted with its breeding problems.

Finally it should be pointed out that several times the authors emphasize that progress in the field, and its attendant benefits to mankind, depend to a large extent upon free exchange of ideas and materials among workers at different stations and in different nations. This thought is one which it is to be hoped will permeate fields far greater in scope than that of plant breeding.

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Apache-state Flora

Flowering Plants and Ferns of Arizona. By T. H. Kearney and R. H. Peebles (and collaborators). Pp. 1,069, illustrated (29 plates and frontispiece) and indexed. U. S. Dept. of Agriculture Misc. Publ. 423. May, 1942. \$2.00.

This, the second volume to appear in the last two years that can be truly called a state Flora, takes its place alongside Deam's *Flora of Indiana* as an example for authors of future state Floras to emulate. The differences, other than format and general plan, between these two state Floras are primarily due to the fact that while